

State the property that justifies each statement.

14. If  $m\angle A = m\angle B$  and  $m\angle B = m\angle C$ ,  $m\angle A = m\angle C$ .

Transitive

15. If  $HJ + 5 = 20$ , then  $HJ = 15$ .

Subtraction

16. If  $XY + 20 = YW$  and  $XY + 20 = DT$ , then  $YW = DT$ .

Substitution

17. If  $m\angle 1 + m\angle 2 = 90$  and  $m\angle 2 = m\angle 3$ , then  $m\angle 1 + m\angle 3 = 90$ .

Substitution

18. If  $\frac{1}{2}AB = \frac{1}{2}EF$ , then  $AB = EF$ .

Multiplication

19.  $AB = AB$

Reflexive

20. If  $2(x - \frac{3}{2}) = 5$ , which property can be used to support the statement  $2x - 3 = 5$ ?

Distributive

21. Which property allows you to state  $m\angle 4 = m\angle 5$ , if  $m\angle 4 = 35$  and  $m\angle 5 = 35$ ?

Substitution

22. If  $\frac{1}{2}AB = \frac{1}{2}CD$ , which property can be used to justify the statement  $AB = CD$ ?

Multiplication

23. Which property could be used to support the statement  $EF = JK$ , given that  $EF = GH$  and  $GH = JK$ ?

Transitive

Complete each proof.

24. Given:  $\frac{3x+5}{2} = 7$

Prove:  $x = 3$

Proof:

Statements	Reasons
a. $\frac{3x+5}{2} = 7$	a. ?
b. ?	b. Mult. Prop.
c. $3x + 5 = 14$	c. ?
d. $3x = 9$	d. ?
e. ?	e. Div. Prop.

a Given

b  $2(\frac{3x+5}{2}) = 2(7)$

c Substitution

d Subtraction

e  $x = 3$

25. Given:  $2x - 7 = \frac{1}{3}x - 2$

Prove:  $x = 3$

Proof:

Statements	Reasons
a. ?	a. Given
b. ?	b. Mult. Prop.
c. $6x - 21 = x - 6$	c. ?
d. ?	d. Subt. Prop.
e. $5x = 15$	e. ?
f. ?	f. Div. Prop.

a  $2x - 7 = \frac{1}{3}x - 2$

b  $3(2x - 7) = 3(\frac{1}{3}x - 2)$

c Substitution

d  $5x - 21 = -6$

e Addition

f  $x = 3$

**PROOF** Write a two-column proof.

26. If  $4 - \frac{1}{2}a = \frac{7}{2} - a$ , then  $a = -1$ .

27. If  $-2y + \frac{3}{2} = 8$ , then  $y = -\frac{13}{4}$ .

26 ①  $4 - \frac{1}{2}a = \frac{7}{2} - a$

②  $8 - a = 7 - 2a$

③  $8 = 7 - a$

④  $1 = -a$

⑤  $-1 = a$

⑥  $a = -1$

① Given

② Multiplication

③ Addition

④ Subtr.

⑤ Div

⑥ Symmetric

27 ①  $-2y + \frac{3}{2} = 8$

②  $-4y + 3 = 16$

③  $-4y = 13$

④  $y = -\frac{13}{4}$

① Given

② Multiplication

③ Subtr.

④ Div.